



Full wwPDB X-ray Structure Validation Report ⓘ

Jan 16, 2018 – 04:23 PM EST

PDB ID : 2UZP
Title : Crystal structure of the C2 domain of human protein kinase C gamma.
Authors : Pike, A.C.W.; Amos, A.; Johansson, C.; Sobott, F.; Savitsky, P.; Berridge, G.; Fedorov, O.; Umeano, C.; Gorrec, F.; Bunkoczi, G.; Debreczeni, J.; von Delft, F.; Arrowsmith, C.H.; Edwards, A.; Weigelt, J.; Sundstrom, M.; Knapp, S.
Deposited on : 2007-04-30
Resolution : 2.00 Å(reported)

This is a Full wwPDB X-ray Structure Validation Report for a publicly released PDB entry.

We welcome your comments at validation@mail.wwpdb.org

A user guide is available at

<http://wwpdb.org/validation/2016/XrayValidationReportHelp>

with specific help available everywhere you see the ⓘ symbol.

The following versions of software and data (see [references ⓘ](#)) were used in the production of this report:

MolProbity	:	4.02b-467
Mogul	:	1.7.2 (RC1), CSD as538be (2017)
Xtriage (Phenix)	:	1.9-1692
EDS	:	rb-20030736
Percentile statistics	:	20161228.v01 (using entries in the PDB archive December 28th 2016)
Refmac	:	5.8.0135
CCP4	:	6.5.0
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	rb-20030736

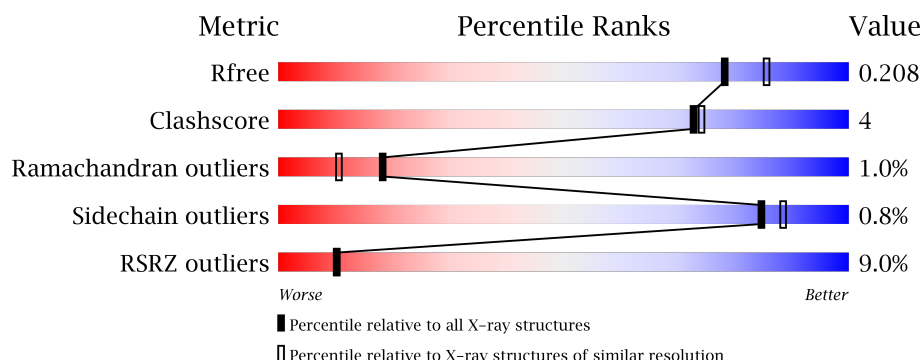
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 2.00 Å.

Percentile scores (ranging between 0-100) for global validation metrics of the entry are shown in the following graphic. The table shows the number of entries on which the scores are based.



Metric	Whole archive (#Entries)	Similar resolution (#Entries, resolution range(Å))
R_{free}	100719	6609 (2.00-2.00)
Clashscore	112137	7775 (2.00-2.00)
Ramachandran outliers	110173	7679 (2.00-2.00)
Sidechain outliers	110143	7678 (2.00-2.00)
RSRZ outliers	101464	6696 (2.00-2.00)

The table below summarises the geometric issues observed across the polymeric chains and their fit to the electron density. The red, orange, yellow and green segments on the lower bar indicate the fraction of residues that contain outliers for ≥ 3 , 2, 1 and 0 types of geometric quality criteria. A grey segment represents the fraction of residues that are not modelled. The numeric value for each fraction is indicated below the corresponding segment, with a dot representing fractions $\leq 5\%$. The upper red bar (where present) indicates the fraction of residues that have poor fit to the electron density. The numeric value is given above the bar.

Mol	Chain	Length	Quality of chain
1	A	144	<div> <div>6%</div> <div>90%</div> <div>6%</div> <div>..</div> </div>
1	B	144	<div> <div>13%</div> <div>94%</div> <div>5%</div> <div>.</div> </div>
1	C	144	<div> <div>8%</div> <div>95%</div> <div>..</div> </div>

2 Entry composition [i](#)

There are 7 unique types of molecules in this entry. The entry contains 4078 atoms, of which 0 are hydrogens and 0 are deuteriums.

In the tables below, the ZeroOcc column contains the number of atoms modelled with zero occupancy, the AltConf column contains the number of residues with at least one atom in alternate conformation and the Trace column contains the number of residues modelled with at most 2 atoms.

- Molecule 1 is a protein called PROTEIN KINASE C GAMMA TYPE.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	142	Total	C	N	O	S	0	8	0
			1203	757	216	226	4			
1	B	142	Total	C	N	O	S	0	3	0
			1139	722	200	213	4			
1	C	142	Total	C	N	O	S	0	2	0
			1143	725	200	214	4			

- Molecule 2 is PYRIDOXAL-5'-PHOSPHATE (three-letter code: PLP) (formula: $C_8H_{10}NO_6P$).



Mol	Chain	Residues	Atoms					ZeroOcc	AltConf
2	A	1	Total	C	N	O	P	0	1
			21	9	1	9	2		
2	B	1	Total	C	N	O	P	0	1
			21	9	1	9	2		
2	C	1	Total	C	N	O	P	0	0
			15	8	1	5	1		

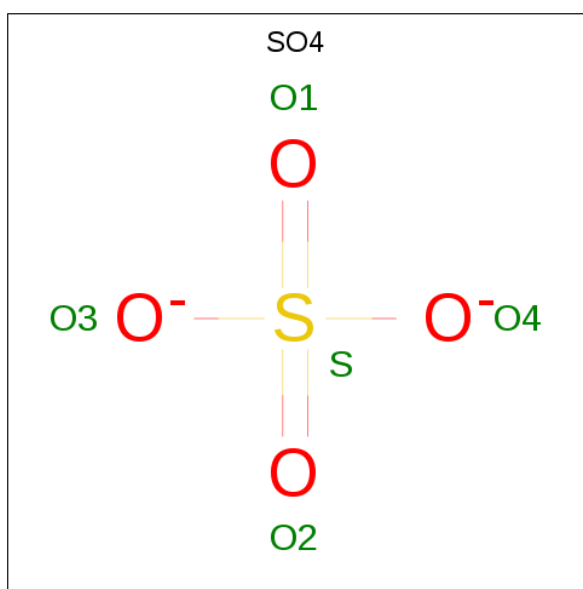
- Molecule 3 is COBALT (II) ION (three-letter code: CO) (formula: Co).

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
3	B	1	Total	Co	0	0
			1	1		
3	A	1	Total	Co	0	0
			1	1		
3	C	1	Total	Co	0	0
			1	1		

- Molecule 4 is CALCIUM ION (three-letter code: CA) (formula: Ca).

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
4	B	3	Total	Ca	0	0
			3	3		
4	A	3	Total	Ca	0	0
			3	3		
4	C	3	Total	Ca	0	0
			3	3		

- Molecule 5 is SULFATE ION (three-letter code: SO4) (formula: O₄S).



Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
5	A	1	Total	O	S	0	0
			5	4	1		
5	A	1	Total	O	S	0	0
			5	4	1		
5	A	1	Total	O	S	0	0
			5	4	1		

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Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
5	A	1	Total	O	S	0	0
			5	4	1		
5	A	1	Total	O	S	0	0
			5	4	1		
5	A	1	Total	O	S	0	0
			5	4	1		
5	B	1	Total	O	S	0	0
			5	4	1		
5	B	1	Total	O	S	0	0
			5	4	1		
5	B	1	Total	O	S	0	0
			5	4	1		
5	B	1	Total	O	S	0	0
			5	4	1		
5	B	1	Total	O	S	0	0
			5	4	1		
5	B	1	Total	O	S	0	0
			5	4	1		
5	C	1	Total	O	S	0	0
			5	4	1		
5	C	1	Total	O	S	0	0
			5	4	1		
5	C	1	Total	O	S	0	0
			5	4	1		
5	C	1	Total	O	S	0	0
			5	4	1		
5	C	1	Total	O	S	0	0
			5	4	1		
5	C	1	Total	O	S	0	0
			5	4	1		

- Molecule 6 is 1,2-ETHANEDIOL (three-letter code: EDO) (formula: C₂H₆O₂).



Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
6	A	1	Total	C	O	0	0
			4	2	2		
6	A	1	Total	C	O	0	0
			4	2	2		
6	B	1	Total	C	O	0	0
			4	2	2		
6	B	1	Total	C	O	0	0
			4	2	2		
6	C	1	Total	C	O	0	0
			4	2	2		
6	C	1	Total	C	O	0	0
			4	2	2		
6	C	1	Total	C	O	0	0
			4	2	2		
6	C	1	Total	C	O	0	0
			4	2	2		

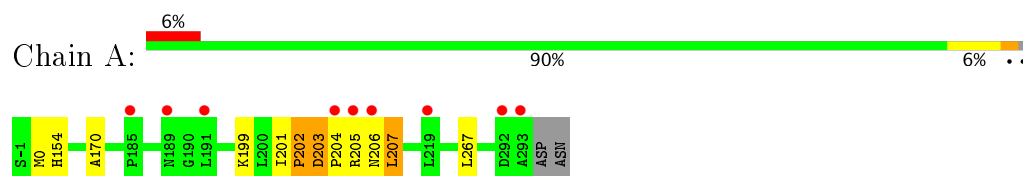
- Molecule 7 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
7	A	145	Total	O	0	0
			145	145		
7	B	115	Total	O	0	0
			115	115		
7	C	132	Total	O	0	0
			132	132		

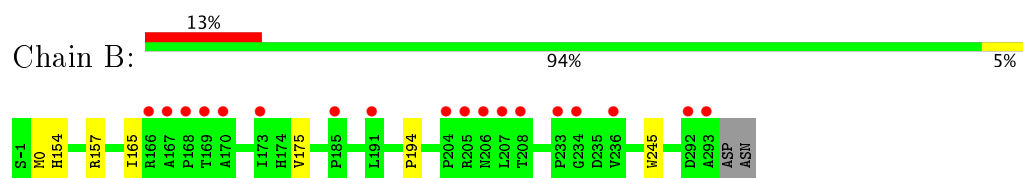
3 Residue-property plots [i](#)

These plots are drawn for all protein, RNA and DNA chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry and electron density. Residues are color-coded according to the number of geometric quality criteria for which they contain at least one outlier: green = 0, yellow = 1, orange = 2 and red = 3 or more. A red dot above a residue indicates a poor fit to the electron density ($RSRZ > 2$). Stretches of 2 or more consecutive residues without any outlier are shown as a green connector. Residues present in the sample, but not in the model, are shown in grey.

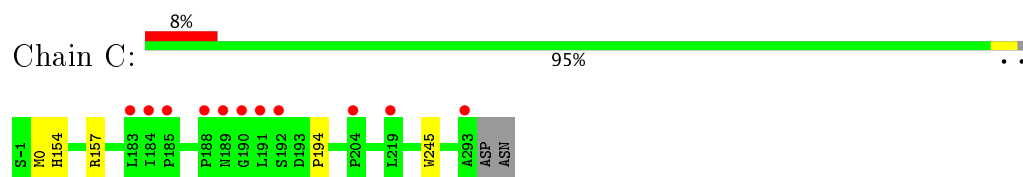
- Molecule 1: PROTEIN KINASE C GAMMA TYPE



- Molecule 1: PROTEIN KINASE C GAMMA TYPE



- Molecule 1: PROTEIN KINASE C GAMMA TYPE



4 Data and refinement statistics

Property	Value	Source
Space group	P 43 21 2	Depositor
Cell constants a, b, c, α , β , γ	138.50 Å 138.50 Å 68.36 Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	50.00 – 2.00 48.97 – 2.00	Depositor EDS
% Data completeness (in resolution range)	100.0 (50.00-2.00) 100.0 (48.97-2.00)	Depositor EDS
R_{merge}	0.10	Depositor
R_{sym}	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ ¹	2.77 (at 2.00 Å)	Xtriage
Refinement program	REFMAC 5.2.0019	Depositor
R, R_{free}	0.171 , 0.205 0.173 , 0.208	Depositor DCC
R_{free} test set	2294 reflections (5.32%)	DCC
Wilson B-factor (Å ²)	30.2	Xtriage
Anisotropy	0.301	Xtriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.33 , 43.9	EDS
L-test for twinning ²	$\langle L \rangle = 0.50$, $\langle L^2 \rangle = 0.33$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
F_o, F_c correlation	0.95	EDS
Total number of atoms	4078	wwPDB-VP
Average B, all atoms (Å ²)	39.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 3.82% of the height of the origin peak. No significant pseudotranslation is detected.*

¹Intensities estimated from amplitudes.

²Theoretical values of $\langle |L| \rangle$, $\langle L^2 \rangle$ for acentric reflections are 0.5, 0.333 respectively for untwinned datasets, and 0.375, 0.2 for perfectly twinned datasets.

5 Model quality

5.1 Standard geometry

Bond lengths and bond angles in the following residue types are not validated in this section: CO, PLP, CA, EDO, DSN, SO4

The Z score for a bond length (or angle) is the number of standard deviations the observed value is removed from the expected value. A bond length (or angle) with $|Z| > 5$ is considered an outlier worth inspection. RMSZ is the root-mean-square of all Z scores of the bond lengths (or angles).

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	$\# Z > 5$	RMSZ	$\# Z > 5$
1	A	0.59	2/1239 (0.2%)	0.84	6/1684 (0.4%)
1	B	0.49	0/1173	0.61	0/1597
1	C	0.48	0/1173	0.63	0/1595
All	All	0.53	2/3585 (0.1%)	0.70	6/4876 (0.1%)

Chiral center outliers are detected by calculating the chiral volume of a chiral center and verifying if the center is modelled as a planar moiety or with the opposite hand. A planarity outlier is detected by checking planarity of atoms in a peptide group, atoms in a mainchain group or atoms of a sidechain that are expected to be planar.

Mol	Chain	#Chirality outliers	#Planarity outliers
1	A	0	1

All (2) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	A	207[A]	LEU	CB-CG	6.65	1.71	1.52
1	A	207[B]	LEU	CB-CG	6.65	1.71	1.52

All (6) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	A	207[A]	LEU	CB-CG-CD2	-8.91	95.85	111.00
1	A	207[B]	LEU	CB-CG-CD2	-8.91	95.85	111.00
1	A	207[A]	LEU	CB-CG-CD1	-7.61	98.06	111.00
1	A	207[B]	LEU	CB-CG-CD1	-7.61	98.06	111.00
1	A	207[A]	LEU	CA-CB-CG	-7.36	98.38	115.30
1	A	207[B]	LEU	CA-CB-CG	-7.36	98.38	115.30

There are no chirality outliers.

All (1) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	A	202[B]	PRO	Peptide

5.2 Too-close contacts

In the following table, the Non-H and H(model) columns list the number of non-hydrogen atoms and hydrogen atoms in the chain respectively. The H(added) column lists the number of hydrogen atoms added and optimized by MolProbity. The Clashes column lists the number of clashes within the asymmetric unit, whereas Symm-Clashes lists symmetry related clashes.

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	A	1203	0	1189	24	0
1	B	1139	0	1114	3	0
1	C	1143	0	1123	2	0
2	A	21	0	4	0	0
2	B	21	0	4	0	0
2	C	15	0	6	0	0
3	A	1	0	0	0	0
3	B	1	0	0	0	0
3	C	1	0	0	0	0
4	A	3	0	0	0	0
4	B	3	0	0	0	0
4	C	3	0	0	0	0
5	A	30	0	0	0	0
5	B	35	0	0	0	0
5	C	35	0	0	0	0
6	A	8	0	12	0	0
6	B	8	0	12	0	0
6	C	16	0	24	0	0
7	A	145	0	0	0	0
7	B	115	0	0	0	0
7	C	132	0	0	0	0
All	All	4078	0	3488	28	0

The all-atom clashscore is defined as the number of clashes found per 1000 atoms (including hydrogen atoms). The all-atom clashscore for this structure is 4.

All (28) close contacts within the same asymmetric unit are listed below, sorted by their clash magnitude.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:205[A]:ARG:HB3	1:A:207[A]:LEU:HD11	1.26	1.14

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:205[A]:ARG:CB	1:A:207[A]:LEU:HD11	1.80	1.10
1:A:201:ILE:HG22	1:A:203[B]:ASP:HB3	1.50	0.92
1:A:205[A]:ARG:HB2	1:A:207[A]:LEU:HD11	1.68	0.74
1:A:203[B]:ASP:N	1:A:204[B]:PRO:HD2	2.11	0.66
1:A:205[A]:ARG:O	1:A:207[A]:LEU:HG	1.95	0.65
1:A:205[A]:ARG:C	1:A:207[A]:LEU:HG	2.17	0.64
1:A:203[B]:ASP:N	1:A:204[B]:PRO:CD	2.66	0.58
1:A:199:LYS:NZ	1:A:203[B]:ASP:HB2	2.19	0.57
1:A:203[B]:ASP:H	1:A:204[B]:PRO:CD	2.17	0.56
1:A:203[B]:ASP:N	1:A:203[B]:ASP:OD2	2.39	0.56
1:A:203[B]:ASP:H	1:A:204[B]:PRO:HD2	1.74	0.53
1:A:205[B]:ARG:NH2	1:A:207[B]:LEU:HD11	2.24	0.53
1:A:203[B]:ASP:O	1:A:205[B]:ARG:N	2.46	0.48
1:A:205[A]:ARG:HB2	1:A:207[A]:LEU:HD12	1.95	0.48
1:A:170:ALA:HA	1:A:267:LEU:HD22	1.97	0.46
1:B:157:ARG:HD3	1:C:157:ARG:HD3	1.98	0.46
1:A:201:ILE:HA	1:A:202[B]:PRO:C	2.37	0.45
1:A:203[B]:ASP:O	1:A:204[B]:PRO:C	2.56	0.44
1:A:199:LYS:HZ1	1:A:203[B]:ASP:HB2	1.80	0.44
1:A:205[B]:ARG:HD3	1:A:207[B]:LEU:HD12	2.00	0.43
1:A:205[B]:ARG:O	1:A:206[B]:ASN:HB2	2.19	0.41
1:B:194:PRO:HA	1:B:245:TRP:O	2.21	0.41
1:C:194:PRO:HA	1:C:245:TRP:O	2.21	0.41
1:B:165:ILE:HG23	1:B:175:VAL:HG22	2.02	0.41

There are no symmetry-related clashes.

5.3 Torsion angles [i](#)

5.3.1 Protein backbone [i](#)

In the following table, the Percentiles column shows the percent Ramachandran outliers of the chain as a percentile score with respect to all X-ray entries followed by that with respect to entries of similar resolution.

The Analysed column shows the number of residues for which the backbone conformation was analysed, and the total number of residues.

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles
1	A	148/144 (103%)	139 (94%)	6 (4%)	3 (2%)	9 3

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	B	143/144 (99%)	140 (98%)	2 (1%)	1 (1%)	25	18
1	C	142/144 (99%)	138 (97%)	3 (2%)	1 (1%)	25	18
All	All	433/432 (100%)	417 (96%)	11 (2%)	5 (1%)	18	8

All (5) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	0	MET
1	B	0	MET
1	C	0	MET
1	A	203[A]	ASP
1	A	203[B]	ASP

5.3.2 Protein sidechains ⓘ

In the following table, the Percentiles column shows the percent sidechain outliers of the chain as a percentile score with respect to all X-ray entries followed by that with respect to entries of similar resolution.

The Analysed column shows the number of residues for which the sidechain conformation was analysed, and the total number of residues.

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	A	133/127 (105%)	132 (99%)	1 (1%)	85	88
1	B	123/127 (97%)	122 (99%)	1 (1%)	85	88
1	C	124/127 (98%)	123 (99%)	1 (1%)	85	88
All	All	380/381 (100%)	377 (99%)	3 (1%)	85	88

All (3) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	154	HIS
1	B	154	HIS
1	C	154	HIS

Some sidechains can be flipped to improve hydrogen bonding and reduce clashes. There are no such sidechains identified.

5.3.3 RNA ⓘ

There are no RNA molecules in this entry.

5.4 Non-standard residues in protein, DNA, RNA chains ⓘ

3 non-standard protein/DNA/RNA residues are modelled in this entry.

In the following table, the Counts columns list the number of bonds (or angles) for which Mogul statistics could be retrieved, the number of bonds (or angles) that are observed in the model and the number of bonds (or angles) that are defined in the Chemical Component Dictionary. The Link column lists molecule types, if any, to which the group is linked. The Z score for a bond length (or angle) is the number of standard deviations the observed value is removed from the expected value. A bond length (or angle) with $|Z| > 2$ is considered an outlier worth inspection. RMSZ is the root-mean-square of all Z scores of the bond lengths (or angles).

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\# Z > 2$	Counts	RMSZ	$\# Z > 2$
1	DSN	A	-1	1,2	5,5,6	1.13	1 (20%)	1,5,7	1.39	0
1	DSN	B	-1	1,2	5,5,6	1.21	1 (20%)	1,5,7	1.37	0
1	DSN	C	-1	1,2	5,5,6	1.00	0	1,5,7	1.36	0

In the following table, the Chirals column lists the number of chiral outliers, the number of chiral centers analysed, the number of these observed in the model and the number defined in the Chemical Component Dictionary. Similar counts are reported in the Torsion and Rings columns. '-' means no outliers of that kind were identified.

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
1	DSN	A	-1	1,2	-	0/2/4/6	0/0/0/0
1	DSN	B	-1	1,2	-	0/2/4/6	0/0/0/0
1	DSN	C	-1	1,2	-	0/2/4/6	0/0/0/0

All (2) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	A	-1	DSN	CA-C	2.29	1.53	1.50
1	B	-1	DSN	CA-C	2.41	1.53	1.50

There are no bond angle outliers.

There are no chirality outliers.

There are no torsion outliers.

There are no ring outliers.

No monomer is involved in short contacts.

5.5 Carbohydrates

There are no carbohydrates in this entry.

5.6 Ligand geometry

Of 45 ligands modelled in this entry, 12 are monoatomic - leaving 33 for Mogul analysis.

In the following table, the Counts columns list the number of bonds (or angles) for which Mogul statistics could be retrieved, the number of bonds (or angles) that are observed in the model and the number of bonds (or angles) that are defined in the Chemical Component Dictionary. The Link column lists molecule types, if any, to which the group is linked. The Z score for a bond length (or angle) is the number of standard deviations the observed value is removed from the expected value. A bond length (or angle) with $|Z| > 2$ is considered an outlier worth inspection. RMSZ is the root-mean-square of all Z scores of the bond lengths (or angles).

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z > 2	Counts	RMSZ	# Z > 2
2	PLP	A	1294[A]	-	15,15,16	1.06	2 (13%)	20,22,23	1.20	3 (15%)
2	PLP	A	1294[B]	-	15,15,16	1.07	2 (13%)	20,22,23	1.24	3 (15%)
5	SO4	A	1299	4	4,4,4	0.27	0	6,6,6	0.39	0
5	SO4	A	1300	-	4,4,4	0.14	0	6,6,6	0.18	0
5	SO4	A	1301	-	4,4,4	0.24	0	6,6,6	0.79	0
5	SO4	A	1302	-	4,4,4	0.22	0	6,6,6	0.34	0
5	SO4	A	1303	-	4,4,4	0.11	0	6,6,6	0.53	0
5	SO4	A	1304	-	4,4,4	0.18	0	6,6,6	0.39	0
6	EDO	A	1305	-	3,3,3	0.35	0	2,2,2	0.45	0
6	EDO	A	1306	-	3,3,3	0.53	0	2,2,2	0.08	0
2	PLP	B	1294[A]	-	15,15,16	1.18	2 (13%)	20,22,23	1.03	0
2	PLP	B	1294[B]	-	15,15,16	1.19	2 (13%)	20,22,23	1.10	0
5	SO4	B	1299	4	4,4,4	0.28	0	6,6,6	0.65	0
5	SO4	B	1300	-	4,4,4	0.11	0	6,6,6	0.35	0
5	SO4	B	1301	-	4,4,4	0.33	0	6,6,6	0.35	0
5	SO4	B	1302	-	4,4,4	0.21	0	6,6,6	0.26	0
5	SO4	B	1303	-	4,4,4	0.19	0	6,6,6	0.45	0
5	SO4	B	1304	-	4,4,4	0.17	0	6,6,6	0.18	0
5	SO4	B	1305	-	4,4,4	0.30	0	6,6,6	0.63	0
6	EDO	B	1306	-	3,3,3	0.44	0	2,2,2	0.11	0
6	EDO	B	1307	-	3,3,3	0.41	0	2,2,2	0.42	0
2	PLP	C	1294	1,3	15,15,16	0.96	2 (13%)	20,22,23	1.07	1 (5%)
5	SO4	C	1299	4	4,4,4	0.32	0	6,6,6	0.57	0

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z > 2	Counts	RMSZ	# Z > 2
5	SO4	C	1300	-	4,4,4	0.09	0	6,6,6	0.38	0
5	SO4	C	1301	-	4,4,4	0.16	0	6,6,6	0.27	0
5	SO4	C	1302	-	4,4,4	0.19	0	6,6,6	0.55	0
5	SO4	C	1303	-	4,4,4	0.16	0	6,6,6	0.20	0
5	SO4	C	1304	-	4,4,4	0.12	0	6,6,6	0.48	0
5	SO4	C	1305	-	4,4,4	0.15	0	6,6,6	0.39	0
6	EDO	C	1306	-	3,3,3	0.45	0	2,2,2	0.09	0
6	EDO	C	1307	-	3,3,3	0.59	0	2,2,2	0.09	0
6	EDO	C	1308	-	3,3,3	0.38	0	2,2,2	0.51	0
6	EDO	C	1309	-	3,3,3	0.52	0	2,2,2	0.26	0

In the following table, the Chirals column lists the number of chiral outliers, the number of chiral centers analysed, the number of these observed in the model and the number defined in the Chemical Component Dictionary. Similar counts are reported in the Torsion and Rings columns. '-' means no outliers of that kind were identified.

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
2	PLP	A	1294[A]	-	-	0/6/6/8	0/1/1/1
2	PLP	A	1294[B]	-	-	0/6/6/8	0/1/1/1
5	SO4	A	1299	4	-	0/0/0/0	0/0/0/0
5	SO4	A	1300	-	-	0/0/0/0	0/0/0/0
5	SO4	A	1301	-	-	0/0/0/0	0/0/0/0
5	SO4	A	1302	-	-	0/0/0/0	0/0/0/0
5	SO4	A	1303	-	-	0/0/0/0	0/0/0/0
5	SO4	A	1304	-	-	0/0/0/0	0/0/0/0
6	EDO	A	1305	-	-	0/1/1/1	0/0/0/0
6	EDO	A	1306	-	-	0/1/1/1	0/0/0/0
2	PLP	B	1294[A]	-	-	0/6/6/8	0/1/1/1
2	PLP	B	1294[B]	-	-	0/6/6/8	0/1/1/1
5	SO4	B	1299	4	-	0/0/0/0	0/0/0/0
5	SO4	B	1300	-	-	0/0/0/0	0/0/0/0
5	SO4	B	1301	-	-	0/0/0/0	0/0/0/0
5	SO4	B	1302	-	-	0/0/0/0	0/0/0/0
5	SO4	B	1303	-	-	0/0/0/0	0/0/0/0
5	SO4	B	1304	-	-	0/0/0/0	0/0/0/0
5	SO4	B	1305	-	-	0/0/0/0	0/0/0/0
6	EDO	B	1306	-	-	0/1/1/1	0/0/0/0
6	EDO	B	1307	-	-	0/1/1/1	0/0/0/0
2	PLP	C	1294	1,3	-	0/6/6/8	0/1/1/1
5	SO4	C	1299	4	-	0/0/0/0	0/0/0/0
5	SO4	C	1300	-	-	0/0/0/0	0/0/0/0
5	SO4	C	1301	-	-	0/0/0/0	0/0/0/0
5	SO4	C	1302	-	-	0/0/0/0	0/0/0/0

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
5	SO4	C	1303	-	-	0/0/0/0	0/0/0/0
5	SO4	C	1304	-	-	0/0/0/0	0/0/0/0
5	SO4	C	1305	-	-	0/0/0/0	0/0/0/0
6	EDO	C	1306	-	-	0/1/1/1	0/0/0/0
6	EDO	C	1307	-	-	0/1/1/1	0/0/0/0
6	EDO	C	1308	-	-	0/1/1/1	0/0/0/0
6	EDO	C	1309	-	-	0/1/1/1	0/0/0/0

All (10) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	B	1294[A]	PLP	C3-C2	-2.36	1.39	1.40
2	B	1294[B]	PLP	C3-C2	-2.36	1.39	1.40
2	C	1294	PLP	C2-N1	2.02	1.38	1.33
2	B	1294[A]	PLP	C6-N1	2.03	1.38	1.34
2	B	1294[B]	PLP	C6-N1	2.03	1.38	1.34
2	C	1294	PLP	C6-N1	2.10	1.38	1.34
2	A	1294[B]	PLP	C6-N1	2.12	1.39	1.34
2	A	1294[A]	PLP	C6-N1	2.12	1.39	1.34
2	A	1294[B]	PLP	C2-N1	2.60	1.39	1.33
2	A	1294[A]	PLP	C2-N1	2.60	1.39	1.33

All (7) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	C	1294	PLP	C5-C6-N1	-2.19	120.16	123.87
2	A	1294[B]	PLP	C4A-C4-C3	-2.01	117.08	120.54
2	A	1294[A]	PLP	C4A-C4-C3	-2.01	117.08	120.54
2	A	1294[B]	PLP	O3-C3-C2	2.26	122.52	117.78
2	A	1294[A]	PLP	O3-C3-C2	2.26	122.52	117.78
2	A	1294[B]	PLP	C2A-C2-C3	2.47	123.91	120.96
2	A	1294[A]	PLP	C2A-C2-C3	2.47	123.91	120.96

There are no chirality outliers.

There are no torsion outliers.

There are no ring outliers.

No monomer is involved in short contacts.

5.7 Other polymers [i](#)

There are no such residues in this entry.

5.8 Polymer linkage issues [i](#)

There are no chain breaks in this entry.

6 Fit of model and data

6.1 Protein, DNA and RNA chains

In the following table, the column labelled ‘#RSRZ> 2’ contains the number (and percentage) of RSRZ outliers, followed by percent RSRZ outliers for the chain as percentile scores relative to all X-ray entries and entries of similar resolution. The OWAB column contains the minimum, median, 95th percentile and maximum values of the occupancy-weighted average B-factor per residue. The column labelled ‘Q< 0.9’ lists the number of (and percentage) of residues with an average occupancy less than 0.9.

Mol	Chain	Analysed	<RSRZ>	#RSRZ>2		OWAB(Å ²)	Q<0.9
1	A	141/144 (97%)	0.48	9 (6%)	20 20	32, 36, 49, 69	1 (0%)
1	B	141/144 (97%)	0.81	18 (12%)	4 4	31, 37, 51, 79	0
1	C	141/144 (97%)	0.68	11 (7%)	14 14	32, 37, 50, 73	0
All	All	423/432 (97%)	0.65	38 (8%)	10 10	31, 37, 51, 79	1 (0%)

All (38) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	A	293	ALA	7.0
1	B	204	PRO	6.8
1	B	205	ARG	5.7
1	B	293	ALA	5.4
1	A	204[A]	PRO	4.1
1	B	207	LEU	4.0
1	B	168	PRO	3.7
1	B	173	ILE	3.5
1	C	293	ALA	3.4
1	C	191	LEU	3.4
1	B	233	PRO	3.1
1	B	206	ASN	3.1
1	A	292	ASP	2.9
1	B	292	ASP	2.8
1	A	206[A]	ASN	2.8
1	C	219	LEU	2.8
1	A	191	LEU	2.8
1	B	208	THR	2.7
1	C	204	PRO	2.7
1	C	183	LEU	2.7
1	C	190	GLY	2.7
1	C	185	PRO	2.6
1	A	205[A]	ARG	2.6

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Mol	Chain	Res	Type	RSRZ
1	B	185	PRO	2.6
1	B	236	VAL	2.5
1	B	166	ARG	2.5
1	C	188	PRO	2.4
1	C	184	ILE	2.3
1	C	192[A]	SER	2.3
1	C	189	ASN	2.2
1	B	191	LEU	2.2
1	A	185	PRO	2.2
1	B	169	THR	2.2
1	B	167	ALA	2.1
1	B	170	ALA	2.1
1	A	189	ASN	2.0
1	A	219	LEU	2.0
1	B	234	GLY	2.0

6.2 Non-standard residues in protein, DNA, RNA chains [i](#)

In the following table, the Atoms column lists the number of modelled atoms in the group and the number defined in the chemical component dictionary. LLDF column lists the quality of electron density of the group with respect to its neighbouring residues in protein, DNA or RNA chains. The B-factors column lists the minimum, median, 95th percentile and maximum values of B factors of atoms in the group. The column labelled 'Q< 0.9' lists the number of atoms with occupancy less than 0.9.

Mol	Type	Chain	Res	Atoms	RSCC	RSR	LLDF	B-factors(Å ²)	Q<0.9
1	DSN	A	-1	6/7	0.93	0.16	-	38,42,46,54	0
1	DSN	C	-1	6/7	0.91	0.16	-	36,39,42,48	0
1	DSN	B	-1	6/7	0.94	0.16	-	35,38,42,48	0

6.3 Carbohydrates [i](#)

There are no carbohydrates in this entry.

6.4 Ligands [i](#)

In the following table, the Atoms column lists the number of modelled atoms in the group and the number defined in the chemical component dictionary. LLDF column lists the quality of electron density of the group with respect to its neighbouring residues in protein, DNA or RNA chains. The B-factors column lists the minimum, median, 95th percentile and maximum values of B factors

of atoms in the group. The column labelled 'Q< 0.9' lists the number of atoms with occupancy less than 0.9.

Mol	Type	Chain	Res	Atoms	RSCC	RSR	LLDF	B-factors(Å ²)	Q<0.9
5	SO4	C	1300	5/5	0.99	0.17	1.62	30,37,38,44	0
5	SO4	B	1303	5/5	0.96	0.26	1.05	34,37,45,51	5
5	SO4	A	1304	5/5	0.92	0.17	0.92	26,41,49,53	5
5	SO4	B	1300	5/5	0.98	0.14	0.58	46,47,51,52	0
2	PLP	A	1294[B]	15/16	0.93	0.16	0.14	23,34,45,58	6
2	PLP	A	1294[A]	15/16	0.93	0.16	0.14	23,33,43,47	6
5	SO4	C	1305	5/5	0.92	0.18	-0.09	34,41,49,52	5
6	EDO	B	1306	4/4	0.97	0.14	-0.13	26,32,35,38	0
5	SO4	A	1300	5/5	0.99	0.13	-0.15	32,34,41,48	0
5	SO4	B	1305	5/5	0.85	0.20	-0.27	47,50,59,60	5
5	SO4	B	1301	5/5	0.92	0.18	-0.27	29,37,45,50	5
6	EDO	A	1305	4/4	0.91	0.16	-0.40	55,55,59,66	0
2	PLP	B	1294[B]	15/16	0.94	0.14	-0.46	26,35,44,57	6
2	PLP	B	1294[A]	15/16	0.94	0.14	-0.46	29,34,42,42	6
5	SO4	A	1301	5/5	0.93	0.15	-0.51	37,44,53,63	0
6	EDO	A	1306	4/4	0.90	0.18	-0.70	30,57,59,59	0
2	PLP	C	1294	15/16	0.93	0.13	-0.77	27,32,70,78	0
6	EDO	C	1307	4/4	0.97	0.13	-1.32	24,25,36,38	0
5	SO4	C	1302	5/5	0.95	0.12	-2.09	45,50,60,63	0
6	EDO	C	1306	4/4	0.97	0.10	-2.23	24,32,37,40	0
4	CA	A	1298	1/1	0.98	0.06	-2.50	27,27,27,27	0
5	SO4	A	1299	5/5	0.99	0.09	-2.86	24,34,36,37	0
5	SO4	C	1299	5/5	0.96	0.09	-3.75	31,32,45,50	0
5	SO4	B	1299	5/5	0.98	0.07	-4.11	24,29,32,34	0
4	CA	B	1296	1/1	1.00	0.04	-4.15	25,25,25,25	0
4	CA	C	1296	1/1	0.99	0.02	-4.42	22,22,22,22	0
4	CA	B	1298	1/1	0.99	0.04	-4.97	20,20,20,20	0
4	CA	A	1297	1/1	0.99	0.02	-5.93	21,21,21,21	0
4	CA	A	1296	1/1	1.00	0.02	-6.40	22,22,22,22	0
4	CA	B	1297	1/1	0.99	0.02	-6.61	22,22,22,22	0
4	CA	C	1297	1/1	0.99	0.04	-7.64	28,28,28,28	0
5	SO4	A	1303	5/5	0.96	0.23	-	42,43,53,62	0
5	SO4	C	1304	5/5	0.97	0.14	-	31,31,49,52	5
3	CO	B	1295	1/1	0.98	0.03	-	25,25,25,25	1
5	SO4	B	1302	5/5	0.96	0.16	-	35,54,55,62	0
4	CA	C	1298	1/1	0.98	0.03	-	22,22,22,22	0
6	EDO	B	1307	4/4	0.73	0.34	-	57,58,60,67	0
3	CO	C	1295	1/1	0.99	0.02	-	22,22,22,22	1
5	SO4	A	1302	5/5	0.92	0.25	-	50,64,71,74	0
5	SO4	C	1303	5/5	0.92	0.25	-	70,75,83,86	0
5	SO4	C	1301	5/5	0.95	0.19	-	38,58,61,67	0

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Mol	Type	Chain	Res	Atoms	RSCC	RSR	LLDF	B-factors(\AA^2)	Q<0.9
5	SO4	B	1304	5/5	0.93	0.33	-	78,78,86,86	0
3	CO	A	1295	1/1	1.00	0.02	-	22,22,22,22	1
6	EDO	C	1309	4/4	0.89	0.15	-	37,57,63,64	0
6	EDO	C	1308	4/4	0.82	0.27	-	50,54,55,68	0

6.5 Other polymers [i](#)

There are no such residues in this entry.